Gray Herbarium Harvard University

B. L. ROBINSON, Curator,
Asa Gray Prof. Syst. Bot.
M. L. FERNALD,
Fisher Prof. Nat. Hist. (Bot.)
J. F. MACBRIDE, Assistant
H. ST. JOHN, Assistant
MARY A. DAY, Librarian

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Mr. I. M. Johnston,
Upland, California.

Dear Sir:

I wish to discuss with you some of the plants which were contained in your recent bundle of specimens. I am following your determinations of the Amsinckias. This is the first time I have seen either A. Eastwoodae or A. parviflora from so far south. It is very gratifying indeed to know that you, who know these plants in the field, feel that they are really different things.

No. 1562 has puzzled me greatly; as Gray remarked in the Synoptical flora, the species here are very difficult of discrimination. In referring your plant to M. Fremontii I am discounting the possibility for considerable variation in the shape of the calyx. There seems to be more room for variation in the shape of the calyx and the character of the teeth than Dr. Gray provided for in his treatment. The whole group is in need of painstaking revision which would show, I believe, either more species than are now recognized or fewer.

The Arabis belongs likewise to a perplexing group. Typical A. perennans is a slender stemmed, relatively small plant with almost woody base. A. arcuata is a large coarse plant and I think

that it is to this latter species that your material must be referred, at the present time at least. I notice that you regard A. arcuata as a montane species. It may ascend into the mountains, but farther north, in Idaho for instance, it grows on the sage-brush plains at a comparatively low altitude. I am unable to separate your plant from material which has been referred by Dr. Robinson and others to A. arcuata. The species in Arabis are either very variable or else poorly understood and aggregate.

1651. This seems to be merely one of the innumerable forms that A. gnaphalodes (A. ludiviciana) is capable of assuming.

The three specimens of Galium have given me more trouble than anything else and I must confess that it is impossible for me to place these species definitely. To be able to determine satisfactorily your material would require nothing short of a complete revision of the entire group together with a decision as to what the actual specific limitations within the group are. Every time I have occasion to turn to southwestern Galiums I am reminded of the need here of critical study. We have no authentic material of G. siccatum Wright, to which you say your 1591 has been referred. This plant simulates G. Wrightii very closely.

I have collected in the chaparrel area on Catalina Is. a form which is a close match for your 1483, and I referred my specimen to G. angustifolium, with a big question, however. It is possible that it is only a variant of G. Mathewsii, which it resembles closely in habit. The leaves are much longer than in any specimens we have of the little-known G. Mathewsii or of G. angust-

ifolium, with the exception of my Catalina specimen.

1667, I am glad to be able to say definitely, is McClatchie's G. occidentale. Wright, however, says that this plant cannot be distinguished even varietally from G. californicum, since a large series of specimens show so much variation for this species. I think this is entirely possible; but certainly typical G. californicum is a very different looking thing. I think it will be practically impossible, or at least extremely difficult, to draw specific limitations from herbarium material alone. Someone with the opportunity to acquire a thorough field knowledge of these perplexing Galiums should be the one to attempt to clear up the situation.

I notice that you regard Draba vestita Davidson as the same as D. corrugata Wats. Before Dr. Davidson published his species he sent material here for comparison with Watson's plant and I was unable at that time to see any satisfactory way of separating it.

I thank you for the specimens and hope that if you have any questions you care to ask in regard to them that you will feel quite free to write me.

Very sincerely,

Francis Macbride

1841. Gnaphalium purpureum L.

1620. Cryptantha intermedia (Gray) Greene

1836. Amsinckia Eastwoodae Macbr.

1838, 1833. A. Douglasiana A.DC.

1834, 1835. A. parviflora Heller

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1598. Cryptantha muricata (H. & A.) Nels. & Macbr.

1839, 1840. Plagiobothrys tenellus (Nutt.) Gray

1837. P. nothofulvus Gray

1562. Mimulus Fremonti Gray

1966. Sisymbrium Irio L.

1973. Arabis arcuata Gray ?

1651. Artemisia gnaphalodes Nutt.

1365. Hieraceum Parishii Gray

1640. Aster Menziesii Lindl.

1427. A. hesperius Gray